IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Rangachary Mukundan et al. Docket No.: S-102,315

Serial No.: Examiner:

Filed : November 25, 2003 Art Unit:

For : MIXED POTENTIAL HYDROCARBON SENSOR WITH LOW SENSITIVITY TO MEETHANE AND CO

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.56, 1.97, AND 1.98

Sir:

The documents listed below, copies attached, are submitted in compliance with the duty of disclosure defined in 37 CFR 1.56.

1. Pham et al., "Hydrocarbon Sensors and Materials Therefore," US Patent 6,103,080, Issued August 15, 2000.

CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8(a))

I hereby certify that this correspondence is, on the date shown below, being:

MAILING
☒ deposited with the United States Postal Service with sufficient postage as first class mailin an envelope addressed to the: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450.

FACSIMILE
☐ transmitted by facsimile to the United States Patent and Trademark Office.

Signature

Date November 25, 2003

Ray G. Wilson
(type or print name of person certifying)

2. Kurosawa et al., "NO_x Sensor," US Patent 6,019,981, Issued February 1, 2000.
3. Garzon et al., "Solid State Oxygen Sensor," US Patent 5,543,025, Issued August 6, 1996.
4. Kusanagi et al., "Electrochemical Gas Sensor," US Patent 5,215,643, Issued June 1, 1993.
5. Mehrotra et al., "Whisker Reinforced Ceramic and a Method of Clad/Hot Isostatic Pressing Same," US Patent 4,820,663, Issued April 11, 1989.
6. Mase et al., "Method of Producing Ceramics," US Patent 4,735,666, Issued April 5, 1988.
7. Holfelder et al., "Electrochemical Oxygen Sensor, Particularly for Analysis of Combustion Cases from Internal Combustion Engines," US Patent 4,502,939, Issued March 5, 1985.
8. Hsu et al., "Solid Electrolyte Structure and Method for Forming," US Patent 4,614,628, Issued September 30, 1986.
9. Rychlewski, "Depression Cathode Structure for Cathode Ray Tubes Having Surface Smothness and Method for Producing Same," US Patent 4,478,590, Issued October 23, 1984.
10. Smith, "Method of Making Metalized Ceramic Bodies," US Patent 3,074,143, Issued January 22, 1963.
11. Chiba et al. "Device for Detection of Air/Fuel Ratio From Oxygen Partial Pressure in Exhaust Gas," US Patent 4,304,652, Issued December 8, 1981.
12. Muller et al., "Electrochemical Oxygen Sensor, Particularly for Use in the Exhaust System of Automotive-Type Internal Combustion Engines," US Patent 4,277,323, Issued July 7, 1981.
13. Kennedy, "Solid Electrolyte Electrolytic Cell," US Patent 3,723,589, Issued March 27, 1973.

/SV/
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06/20/2007

14. Niwa et al., "Oxygen Concentration Sensing Apparatus," US Patent 4,220,517, Issued September 02, 1980.

15. Worrell et al., "Electro-Chemical Sensors and Methods for their Manufacture and Use," US Patent 4,786,374, Issued November 22, 1988.

16. Williams et al., "Solid Electrolyte Mixed Potential Phenomena," Studies in Inorganic Chemistry, Vol. 3, pp 275-278, 1982.

17. Miura et al., "Highly Selective CO Sensor Using Stabilized Zirconia and a Couple of Oxide Electrodes," Sensors and Actuators B 47 pp. 84-91, 1998.

18. Li et al., "High-Temperature Carbon Monoxide Potentiometric Sensor," J. Electrochem. Soc. Vol. 140, No. 4, pp. 1068-1073, April 1993.

19. Miura et al., "Mixed Potential Type NO_x Sensor Based on Stabilized Zirconia and Oxide Electrode," J. Electrochem. Soc. Vol. 143, No. 2, February 1996.

20. Hibino et al., "High-Temperature Hydrocarbon Sensors Based on a Stabilized Zirconia Electrolyte and Metal Oxide Electrodes," Electrochemical and Solid State Letters, 2 (12), pp. 651-653, 1999.

21. Mukundan et al., "A Mixed-Potential Sensor Based on a $Ce_{0.8}Gd_{0.2}O_{1.9}$ Electrolyte and Platinum and Gold Electrodes," Journal of The Electrochemical Society, 147 (4), pp. 1583-1588, 2000.

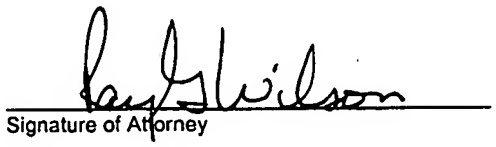
22. Mukundan et al., "Ceria-Electrolyte-Based Mixed Potential Sensors for the Detection of Hydrocarbons and Carbon Monoxide," Electrochemical and Solid State Letters, 2 (8), pp. 412-414, 1999.

This Information Disclosure Statement is not to be construed as a representation that a search has been made or that additional matter material to the examination of this application does not exist.

It is requested that the above citations be made of record in the prosecution of this application. Applicant does not believe that any of these citations constitutes prior art under 35 U.S.C. 102.

Respectfully submitted,

Date: November 25, 2003



Signature of Attorney

Reg. No. 28,351
Phone (505) 665-3112

Ray G. Wilson
Los Alamos National Laboratory
LC/IP, MS A187
Los Alamos, New Mexico 87545

Revised 03/29/02

Form PTO-1449 (Modified) U.S. Department of Commerce Patent and Trademark Office	Attorney Docket No.	Serial No.
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	S-102,315	
	Applicant(s)	
	Rangachary Mukundan	
37 CFR 1.98(b)	Filing Date 11/25/03	Group

U.S. PATENTS DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUB CLASS	FILING DATE
/SV/	6103080	08/15/00	Pham et al.	204	424	02/11/98
/SV/	6019881	02/01/00	Kurosawa et al.	204	424	09/25/98
/SV/	5543025	08/06/96	Garzon et al.	204	425	01/30/95
/SV/	5215643	06/01/93	Kusanagi et al.	204	412	02/23/89
/SV/	4820663	04/11/89	Mehrotra et al.	501	87	09/02/87
/SV/	4735636	04/05/88	Mase et al.	156	89	01/21/86
/SV/	4502937	03/05/85	Holfelder et al.	204	429	01/19/84
/SV/	4614628	09/30/86	Hsu et al.	264	61	07/16/84

FOREIGN PATENT DOCUMENTS

EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	COUNTRY	CLASS	SUB CLASS	Translation YES NO

OTHER DOCUMENTS (Including Author, Title, Date, Place of Publication)

/SV/	Williams et al., "Solid Electrolyte Mixed Potential Phenomena," Studies in Inorganic Chemistry, Vol. 3, pp 275-278, 1982.
/SV/	Miura et al., "Highly Selective CO Sensor Using Stabilized Zirconia and a Couple of Oxide Electrodes," Sensors and Actuators B 47 pp. 84-91, 1998.
/SV/	Li et al., "High-Temperature Carbon Monoxide Potentiometric Sensor," J. Electrochem. Soc. Vol. 140, No. 4, pp. 1068-1073, April 1993.

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*EXAMINER: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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EXAMINER INITIAL	PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUB CLASS	FILING DATE
/SV/	4478590 1	10/23/84	Rychlewski	445	50	12/28/81
/SV/	3074143	01/22/63	Smith	25	156	02/01/60
/SV/	4304652	12/08/81	Chiba et al.	204	195 S	06/06/80
/SV/	4277323	07/07/81	Muller et al.	204	195 S	02/14/80
/SV/	3723589	03/27/73	Kennedy	264	101	02/25/71
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/SV/	4786374	11/22/88	Worrell et al.	204	1	09/29/87

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/SV/	Hibino et al., "High-Temperature Hydrocarbon Sensors Based on a Stabilized Zirconia Electrolyte and Metal Oxide Electrodes," Electrochemical and Solid State Letters, 2 (12), pp. 651-653, 1999.
/SV/	Mukundan et al., "A Mixed-Potential Sensor Based on a $Ce_{0.8}Gd_{0.2}O_{1.9}$ Electrolyte and Platinum and Gold Electrodes," Journal of The Electrochemical Society, 147 (4), pp. 1583-1588, 2000.
/SV/	Mukundan et al., "Ceria-Electrolyte-Based Mixed Potential Sensors for the Detection of Hydrocarbons and Carbon Monoxide," Electrochemical and Solid State Letters, 2 (8), pp. 412-414, 1999.

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